

SUBSTITUTE SEQUENCE LISTING

<110> Cahoon, Rebecca E.
Miao, Guo-Hua
Herrman, Rafael
Rafalski, Antoni
McCutchen, Bill F.

<120> Plant Protein Disulfide Isomerase

<130> BE1085 US NA

<140> 09/417,251
<141> 1999-10-13

<150> 60/049,408
<151> 1998-10-15

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<212> PRT
<213> Zea mays

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Val Leu Ala Glu Phe Phe Ala Pro Trp Cys Gly His Cys Lys Ala Leu
35 40 45

Ala Pro Glu Tyr Glu Glu Ala Ala Thr Thr Leu Lys Glu Lys Asn Ile
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Lys Leu Ala Lys Ile Asp Cys Thr Glu Glu Ser Asp Leu Cys Lys Asp
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Gln Gly Val Glu Gly Tyr Pro Thr Leu Lys Val Phe Arg Gly Leu Asp
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<212> DNA
<213> Glycine max

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35 40 45

Pro Glu Lys Gln Asp Gly Pro Val Tyr Val Leu Val Gly Lys Asn Phe
50 55 60

Glu Ser Ile Val Met Asp Glu Thr Lys Asp Val Leu Val Glu Phe Tyr
65 70 75 80

Ala Pro Trp Cys Gly His Cys Lys Thr Leu Ala Pro Lys Tyr Asp Ala
85 90 95

Leu Gly Glu Ser Phe Lys Ser Asn Pro Asn Val Ile Ile Ala Lys Ile
100 105 110

Asp Ala Thr Ala Asn'Asp Thr Pro Val Asp Ile Gln Gly Phe Pro Thr
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Ile Ile Tyr Trp Pro Ala Asn Asn Lys Lys Asn Pro Ile Thr Tyr Tyr Glu
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<212> PRT

<213> Zea mays

<400> 6

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35 40 45Ala Ala Leu Gly Ala Ile Asp Phe Leu Phe Val Asp Phe Tyr Ala Pro
50 55 60Trp Cys Gly His Cys Lys Arg Leu Ala Pro Glu Leu Asp Glu Ala Ala
65 70 75 80Pro Val Leu Ser Gly Leu Ser Glu Pro Ile Val Val Ala Lys Val Asn
85 90 95Ala Asp Lys Tyr Arg Lys Leu Gly Ser Lys Tyr Gly Val Asp Gly Phe
100 105 110Pro Thr Leu Met Leu Phe Ile His Gly Val Pro Ile Glu Tyr Thr Gly
115 120 125Ser Arg Lys Ala Asp Gln Leu Val Arg Asn Leu Lys Lys Phe Val Ser
130 135 140Pro Asp Val Ser Ile Leu Glu Ser Asp Ser Ala Ile Lys Asn Phe Val
145 150 155 160Glu Asn Ala Gly Ile Ser Phe Pro Ile Phe Leu Gly Phe Gly Val Asn
165 170 175Asp Ser Leu Ile Ala Glu Tyr Gly Arg Lys Tyr Lys Lys Arg Ala Trp
180 185 190Phe Ala Val Ala Lys Asp Phe Ser Glu Asp Ile Met Val Ala Tyr Glu
195 200 205Phe Asp Lys Val Pro Ala Leu Val Ala Ile His Pro Lys Tyr Lys Glu
210 215 220Gln Ser Leu Phe Tyr Gly Pro Phe Glu Glu Asn Phe Leu Glu Asp Phe
225 230 235 240Val Arg Gln Ser Leu Leu Pro Leu Val Val Pro Ile Asn Thr Glu Thr
245 250 255Leu Lys Met Leu Asn Asp Asp Gln Arg Lys Val Val Leu Thr Ile Leu
260 265 270Glu Asp Asp Ser Asp Glu Asn Ser Thr Gln Leu Val Lys Ile Leu Arg
275 280 285Ser Ala Ala Asn Ala Asn Arg Asp Leu Val Phe Gly Tyr Val Gly Ile
290 295 300

Lys Gln Trp Asp Gly Phe Val Glu Thr Phe Asp Val Ser Lys Ser Ser
 305 310 315 320

Gln Leu Pro Lys Leu Leu Val Trp Asp Arg Asp Glu Glu Tyr Glu Leu
 325 330 335

Val Asp Gly Ser Glu Arg Leu Glu Glu Gly Asp Gln Ala Ser Gln Ile
 340 345 350

Ser Gln Phe Leu Glu Gly Tyr Arg Ala Gly Arg Thr Thr Lys Lys
 355 360 365

Ile Thr Gly Pro Ser Phe Met Gly Phe Leu Asn Ser Leu Val Ser Leu
 370 375 380

Asn Ser Leu Tyr Ile Leu Ile Phe Val Ile Ala Leu Leu Phe Val Met
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Val Tyr Phe Ala Gly Gln Asp Asp Thr Pro Gln Pro Arg Arg Ile His
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<211> 1774

<212> DNA

<213> Momordica charantia

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1774

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Asp Phe Ser Asp Phe Glu Asp Ser Asp Ala Asp Arg Asp Glu Tyr Lys
35 40 45

Ala Pro Glu Val Asp Glu Lys Asp Val Val Val Leu Lys Glu Gly Asn
50 55 60

Phe Ser Asp Phe Val Glu Lys Asn Arg Phe Val Met Val Glu Phe Tyr
65 70 75 80

Ala Pro Trp Cys Gly His Cys Gln Ala Leu Ala Pro Glu Tyr Ala Ala
85 90 95

Ala Ala Thr Glu Leu Lys Gly Glu Asn Val Val Leu Ala Lys Val Asp
100 105 110

Ala Thr Glu Glu Asn Glu Leu Ser Gln Lys Tyr Asp Val Gln Gly Phe
115 120 125

Pro Thr Val Tyr Phe Phe Ala Asp Gly Val His Lys Ser Tyr Pro Gly
130 135 140

Gln Arg Thr Lys Asp Ala Ile Val Thr Trp Ile Lys Lys Lys Ile Gly
145 150 155 160

Pro Gly Ile Tyr Asn Ile Thr Ser Val Glu Asp Ala Glu Arg Ile Leu
165 170 175

Thr Ser Glu Thr Lys Val Val Leu Gly Tyr Leu Asn Ser Leu Val Gly
180 185 190

Pro Glu Ser Asn Glu Leu Ala Ala Ala Ser Arg Leu Glu Asp Asp Val
195 200 205

Asn Phe Tyr Gln Thr Val Asp Pro Glu Val Ala Lys Leu Phe His Ile
210 215 220

Glu Ala Ser Ala Lys Arg Pro Ala Leu Val Leu Leu Lys Lys Glu Ala
225 230 235 240

Glu Lys Leu Asn Arg Phe Asp Gly Glu Phe Ser Lys Ser Ala Ile Ala
245 250 255

Glu Phe Val Phe Ala Asn Lys Leu Pro Leu Val Thr Lys Phe Thr Arg
260 265 270

Glu Ser Ala Pro Leu Ile Phe Glu Ser Ser Ile Lys Lys Gln Leu Ile
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 Leu Phé Ala Ile Ser Asn Asp Ser Glu Lys Leu Ile Pro Ile Phe Glu
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 Glu Ser Ser Lys Ser Phe Lys Gly Lys Leu Ile Phe Val Tyr Val Glu
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 Ile Asp Asn Glu Asp Val Gly Lys Pro Val Ser Glu Tyr Phe Gly Ile
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 Ser Gly Asn Gly Pro Glu Val Leu Gly Tyr Thr Gly Asn Glu Asp Ser
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 Lys Lys Phe Val Leu Ala Lys Glu Val Thr Leu Asp Asn Ile Lys Ala
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 370 375 380
 Asp Pro Ile Pro Glu Thr Asn Asp Gly Asp Val Lys Val Val Val Gly
 385 390 395 400
 Asp Asn Phe Asp Asn Ile Val Leu Asp Glu Ser Lys Asp Val Leu Leu
 405 410 415
 Glu Ile Tyr Ala Pro Trp Cys Gly His Cys Gln Ala Leu Glu Pro Thr
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 Tyr Asn Lys Leu Ala Lys His Leu Arg Gly Ile Asp Ser Leu Val Ile
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 Ala Lys Met Asp Gly Thr Thr Asn Glu His Pro Arg Ala Lys Ser Asp
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 Gly Phe Pro Thr Ile Leu Phe Phe Pro Ala Gly Asn Lys Ser Phe Asp
 465 470 475 480
 Pro Ile Thr Val Asp Thr Asp Arg Thr Val Val Ala Leu Tyr Lys Phe
 485 490 495
 Ile Lys Lys Asn Ala Ser Ile Pro Phe Lys Leu Gln Lys Pro Val Ser
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 <212> PRT
 <213> Zea mays

<400> 10

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Glu	Glu	Val	Val	Asp	Asp	Leu	Gln	Tyr	Leu	Ile	Asp	Asn	Ser	Asp	Asp
					35			40			45				

Ile	Pro	Thr	Asn	Asp	Pro	Asp	Gly	Trp	Pro	Glu	Gly	Asp	Tyr	Asp	Asp
					50			55			60				

Asp	Asp	Leu	Leu	Phe	Gln	Asp	Gln	Asp	Leu	Thr	Gly	His	Gln		
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Pro	Glu	Ile	Asp	Glu	Thr	His	Val	Val	Val	Ley	Ala	Ala	Asn	Phe
					85			90					95	

Ser	Ser	Phe	Leu	Ala	Ser	Ser	His	His	Val	Met	Val	Glu	Phe	Tyr	Ala
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Pro Trp Cys Gly His Cys Gln Glu Leu Ala Pro Gly Leu Ser Arg Arg
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Arg Ala His Leu Ala Gly Ser Thr Asn Gln Pro Arg Pro Asn Phe Ala
130 135 140

Leu Ala Lys Val Asp Ala Thr Glu Glu Thr Asp Leu Ala Gln Lys Tyr
145 150 155 160

Asp Val Gln Gly Phe Pro Thr Ile Leu Phe Phe Ile Asp Gly Val Pro
165 170 175

Arg Gly Tyr Asn Gly Ala Arg Thr Lys Glu Ala Ile Val Asp Trp Ile
180 185 190

Asn Lys Lys Leu Gly Pro Ala Val Gln Asn Val Thr Ser Val Asp Glu
195 200 205

Ala Gln Ser Ile Leu Thr Gly Asp Asp Lys Ala Val Leu Ala Phe Leu
210 215 220

Asp Thr Leu Ser Gly Ala His Ser Asp Glu Leu Ala Ala Ala Ser Arg
225 230 235 240

Leu Glu Asp Ser Ile Asn Phe Tyr Gln Thr Ser Thr Pro Asp Val Ala
245 250 255

Lys Leu Phe His Ile Asp Ala Ala Lys Arg Pro Ser Val Val Leu
260 265 270

Leu Lys Lys Glu Glu Lys Leu Thr Phe Tyr Asp Gly Glu Phe Lys
275 280 285

Ala Ser Ala Ile Ala Gly Phe Val Ser Ala Asn Lys Leu Pro Leu Val
290 295 300

Thr Thr Leu Thr Gln Glu Thr Ser Pro Ser Ile Phe Gly Asn Pro Ile
305 310 315 320

Lys Lys Gln Ile Leu Leu Phe Ala Val Ala Ser Glu Ser Thr Lys Phe
325 330 335

Leu Pro Ile Phe Lys Glu Ala Ala Lys Pro Phe Lys Gly Lys Leu Leu
340 345 350

Phe Val Phe Val Glu Arg Asp Ser Glu Glu Val Gly Glu Pro Val Ala
355 360 365

Asp Tyr Phe Gly Ile Thr Gly Gln Glu Thr Thr Val Leu Ala Tyr Thr
370 375 380

Gly Asn Glu Asp Ala Arg Lys Phe Phe Leu Asp Gly Glu Val Ser Leu
385 390 395 400

Glu Ala Ile Lys Asp Phe Ala Glu Gly Phe Leu Glu Asp Lys Leu Thr
405 410 415

Pro Phe Tyr Lys Ser Glu Pro Val Pro Glu Ser Asn Asp Gly Asp Val
420 425 430

Lys Ile Val Val Gly Lys Asn Leu Asp Leu Ile Val Phe Asp Glu Thr
 435 440 445

Lys Asp Val Leu Leu Glu Ile Tyr Ala Pro Trp Cys Gly His Cys Gln
 450 455 460

Ser Leu Glu Pro Thr Tyr Asn Asn Leu Ala Lys His Leu Arg Ser Val
 465 470 475 480

Asp Ser Leu Val Val Ala Lys Met Asp Gly Thr Thr Asn Glu His Pro
 485 490 495

Arg Ala Lys Ser Asp Gly Tyr Pro Thr Ile Leu Phe Tyr Pro Ala Gly
 500 505 510

Lys Lys Ser Phe Glu Pro Ile Thr Phe Glu Gly Glu Arg Thr Val Val
 515 520 525

Asp Leu Tyr Lys Phe Ile Lys Lys His Ala Ser Ile Pro Phe Lys Leu
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Ser Ser Gly Thr Asn Ser Lys Asp Glu Leu
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<211> 891

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 gattccaagg ggagctctga tgccaaagag agccagagta gtgatgtgaa ggacgaatta 660
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<210> 12

<211> 220

<212> PRT

<213> Zea mays

<400> 12

Ala Arg Val Glu Met Asp Asn Glu Asp Val Gly Lys Pro Val Ser Glu
 1 5 10 15

Tyr Phe Gly Ile Ser Gly Asn Ala Pro Lys Val Leu Gly Tyr Thr Gly
 20 25 30

Asn Asp Asp Gly Lys Lys Phe Val Leu Asp Gly Glu Val Thr Thr Asp
 35 40 45
 Lys Ile Lys Ala Phe Gly Glu Asp Phe Val Glu Asp Lys Leu Lys Pro
 50 55 60
 Phe Tyr Lys Ser Asp Pro Val Pro Glu Ser Asn Asp Gly Asp Val Lys
 65 70 75 80
 Ile Val Val Gly Asn Asn Phe Asp Glu Ile Val Leu Asp Glu Ser Lys
 85 90 95
 Asp Val Leu Leu Glu Ile Tyr Ala Pro Trp Cys Gly His Cys Gln Ser
 100 105 110
 Leu Glu Pro Ile Tyr Asn Lys Leu Ala Lys His Leu Arg Asn Ile Asp
 115 120 125
 Ser Leu Val Ile Ala Lys Met Asp Gly Thr Thr Asn Glu His Pro Arg
 130 135 140
 Ala Lys Pro Asp Gly Phe Pro Thr Leu Leu Phe Phe Pro Ala Gly Asn
 145 150 155 160
 Lys Ser Phe Asp Pro Ile Thr Val Asp Thr Asp Arg Thr Val Val Ala
 165 170 175
 Phe Tyr Lys Phe Leu Lys His Ala Ser Ile Pro Phe Lys Leu Gln
 180 185 190
 Lys Pro Thr Ser Thr Ser Glu Ser Asp Ser Lys Gly Ser Ser Asp Ala
 195 200 205
 Lys Glu Ser Gln Ser Ser Asp Val Lys Asp Glu Leu
 210 215 220
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 <211> 1126
 <212> DNA
 <213> Glycine max
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 ttgaaactct tcaagatgtt gcaaaaaacat tcaagtc当地 gataatgttt atatatgtgg 180
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 cgcccttggtg catcaactgt gaggccacta gcaagaagt agagaagtgg gcaaaagcact 540
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 aactgcaagt gaatgactac cccacgcttc tactttacag agcagacgat aaggcaaatc 660
 cgatcaaact ttccacaaaa tcttagtttga aagagggtggc tgcataatc aacaatatg 720
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 gaaaaacact taaccatgaa gaaagtaaaa cattatggaa agaaacaaat attatgtgt 840
 cttgcgttaag cattttctaa tttttattaa cctttccctt gccatccat ggtggccaa 900
 atatgagtta gtctattatt atttgagtta gcttactgt aaattgcgaa agctagtcaa 960
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actttccatt tgcatctcat agaaacctgc aaatcacagg cttaaagttg atgcattgac 1080
 acatatcaa ctcaagctt tataattcga aaaaaaaaaa aaaaaaa 1126

<210> 14
 <211> 251
 <212> PRT
 <213> Glycine max

<400> 14
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Arg Val Tyr Ser Ser Pro Ile Lys Leu Gln Val Leu Val Phe Ala Asn
 20 25 30

Ile Asp Asp Phe Lys Asn Leu Leu Glu Thr Leu Gln Asp Val Ala Lys
 35 40 45

Thr Phe Lys Ser Lys Ile Met Phe Ile Tyr Val Asp Ile Asn Asp Glu
 50 55 60

Asn Leu Ala Lys Pro Phe Leu Thr Leu Phe Gly Leu Glu Glu Ser Lys
 65 70 75 80

Asn Thr Val Val Ala Ala Phe Asp Asn Ala Met Ser Ser Lys Tyr Leu
 85 90 95

Leu Glu Thr Lys Pro Thr Gln Ser Asn Ile Glu Glu Phe Cys Asn Asn
 100 105 110

Leu Val Gln Gly Ser Leu Ser Pro Tyr Phe Lys Ser Gln Pro Ile Pro
 115 120 125

Asp Asn Thr Glu Ser Ser Val His Val Ile Val Gly Lys Thr Phe Asp
 130 135 140

Asp Glu Ile Leu Ser Ser Glu Lys Asp Val Leu Leu Glu Val Phe Thr
 145 150 155 160

Pro Trp Cys Ile Asn Cys Glu Ala Thr Ser Lys Gln Val Glu Lys Leu
 165 170 175

Ala Lys His Tyr Lys Gly Ser Ser Asn Leu Ile Phe Ala Arg Ile Asp
 180 185 190

Ala Ser Ala Asn Glu His Pro Lys Leu Gln Val Asn Asp Tyr Pro Thr
 195 200 205

Leu Leu Leu Tyr Arg Ala Asp Asp Lys Ala Asn Pro Ile Lys Leu Ser
 210 215 220

Thr Lys Ser Ser Leu Lys Glu Leu Ala Ala Ser Ile Asn Lys Tyr Val
 225 230 235 240

Lys Val Lys Asn Gln Val Val Lys Asp Glu Leu
 245 250

<210> 15
 <211> 1943
 <212> DNA

<213> Glycine max

<400> 15

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 gtggcaaaggc tttccatat tgacccagat gttaagcgcc cagctttgat ctcgtcaag 780
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<210> 16

<211> 551

<212> PRT

<213> Glycine max

<400> 16

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20						25							30		

Gly	Phe	Leu	Asp	Glu	Pro	Ser	Ala	Ala	Pro	Glu	His	Gly	His	Tyr	His
35						40					45				

Asp	Asp	Asp	Ala	Asn	Phe	Gly	Asp	Phe	Glu	Glu	Asp	Pro	Glu	Ala	Tyr
50					55				60						

Lys	Gln	Pro	Glu	Val	Asp	Glu	Lys	Asp	Val	Val	Ile	Leu	Lys	Glu	Lys
65				70			75						80		

Asn	Phe	Thr	Asp	Thr	Val	Lys	Ser	Asn	Arg	Phe	Val	Met	Val	Glu	Phe
85					90				95						

Tyr Ala Pro Trp Cys Gly His Cys Gln Ala Leu Ala Pro Glu Tyr Ala
 100 105 110
 Ala Ala Ala Thr Glu Leu Lys Gly Glu Asp Val Ile Leu Ala Lys Val
 115 120 125
 Asp Ala Thr Glu Glu Asn Glu Leu Ala Gln Gln Tyr Asp Val Gln Gly
 130 135 140
 Phe Pro Thr Val His Phe Phe Val Asp Gly Ile His Lys Pro Tyr Asn
 145 150 155 160
 Gly Gln Arg Thr Lys Asp Ala Ile Val Thr Trp Ile Gly Lys Lys Ile
 165 170 175
 Gly Pro Gly Ile Tyr Asn Leu Thr Thr Val Glu Asp Ala Gln Arg Ile
 180 185 190
 Leu Thr Asn Glu Thr Lys Val Val Leu Gly Phe Leu Asn Ser Leu Val
 195 200 205
 Gly Pro Glu Ser Glu Glu Leu Ala Ala Ala Ser Arg Leu Glu Asp Asp
 210 215 220
 Val Asn Phe Tyr Gln Thr Val Asp Pro Asp Val Ala Lys Leu Phe His
 225 230 235 240
 Ile Asp Pro Asp Val Lys Arg Pro Ala Leu Ile Leu Val Lys Lys Glu
 245 250 255
 Glu Glu Lys Leu Asn His Phe Asp Gly Lys Phe Glu Lys Ser Glu Ile
 260 265 270
 Ala Asp Phe Val Phe Ser Asn Lys Leu Pro Leu Val Thr Ile Phe Thr
 275 280 285
 Arg Glu Ser Ala Pro Ser Val Phe Glu Asn Pro Ile Lys Lys Gln Leu
 290 295 300
 Leu Leu Phe Ala Thr Ser Asn Asp Ser Glu Lys Leu Ile Pro Ala Phe
 305 310 315 320
 Lys Glu Ala Ala Lys Ser Phe Lys Gly Lys Leu Ile Phe Val Tyr Val
 325 330 335
 Glu Met Asp Asn Glu Asp Val Gly Lys Pro Val Ser Glu Tyr Phe Gly
 340 345 350
 Ile Ser Gly Asn Ala Pro Lys Val Leu Gly Tyr Thr Gly Asn Asp Asp
 355 360 365
 Gly Lys Lys Phe Val Leu Asp Gly Glu Val Thr Ala Asp Lys Ile Lys
 370 375 380
 Ala Phe Gly Asp Asp Phe Leu Glu Asp Lys Leu Lys Pro Phe Tyr Lys
 385 390 395 400
 Ser Asp Pro Val Pro Glu Ser Asn Asp Gly Asp Val Lys Ile Val Val
 405 410 415

Gly Asn Asn Phe Asp Glu Ile Val Leu Asp Glu Ser Lys Asp Val Leu
 420 425 430

Leu Glu Ile Tyr Ala Pro Trp Cys Gly His Cys Gln Ala Leu Glu Pro
 435 440 445

Ile Tyr Asp Lys Leu Ala Lys His Leu Arg Asn Ile Glu Ser Leu Val
 450 455 460

Ile Ala Lys Met Asp Gly Thr Thr Asn Glu His Pro Arg Ala Lys Pro
 465 470 475 480

Asp Gly Phe Pro Thr Leu Leu Phe Phe Pro Ala Gly Asn Lys Ser Phe
 485 490 495

Asp Pro Ile Thr Val Asp Thr Asp Arg Thr Val Val Ala Phe Tyr Lys
 500 505 510

Phe Leu Lys Lys His Ala Ser Ile Pro Phe Lys Leu Gln Lys Pro Thr
 515 520 525

Ser Thr Ser Asp Ala Lys Gly Ser Ser Asp Ala Lys Glu Ser Gln Ser
 530 535 540

Ser Asp Val Lys Asp Glu Leu
 545 550

<210> 17

<211> 1565

<212> DNA

<213> Triticum aestivum

<400> 17

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1565

<210> 18

<211> 451

<212> PRT

<213> Triticum aestivum

<400> 18

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Glu Arg Ser Ala Gln Leu Met Pro Arg Phe Ala Glu Ala Ala Ala Ala
 20 25 30

Leu Arg Ala Met Gly Ser Ala Val Ala Phe Ala Lys Leu Asp Gly Glu
 35 40 45

Arg Tyr Pro Lys Ala Ala Ala Ala Val Gly Val Lys Gly Phe Pro Thr
 50 55 60

Val Leu Leu Phe Val Asn Gly Thr Glu His Ala Tyr His Gly Leu His
 65 70 75 80

Thr Lys Asp Ala Ile Val Thr Trp Val Arg Lys Lys Thr Gly Glu Pro
 85 90 95

Ile Ile Arg Leu Gln Ser Lys Asp Ser Ala Glu Glu Phe Leu Lys Lys
 100 105 110

Asp Met Thr Phe Val Ile Gly Leu Phe Lys Asn Phe Glu Gly Ala Asp
 115 120 125

His Glu Glu Phe Val Lys Ala Ala Thr Thr Asp Asn Glu Val Gln Phe
 130 135 140

Val Glu Thr Ser Asp Thr Arg Val Ala Lys Val Leu Phe Pro Gly Ile
 145 150 155 160

Thr Ser Glu Glu Lys Phe Val Gly Leu Val Lys Ser Glu Pro Glu Lys
 165 170 175

Phe Glu Lys Phe Asp Gly Lys Phe Glu Glu Thr Glu Ile Leu Arg Phe
 180 185 190

Val Glu Leu Asn Lys Phe Pro Leu Ile Thr Val Phe Thr Glu Leu Asn
 195 200 205

Ser Gly Lys Val Tyr Ser Ser Pro Ile Lys Leu Gln Val Phe Thr Phe
 210 215 220

Ala Glu Ala Tyr Asp Phe Glu Asp Leu Glu Ser Met Val Glu Glu Ile
 225 230 235 240

Ala Arg Ala Phe Lys Thr Lys Ile Met Phe Ile Tyr Val Asp Thr Ala
 245 250 255

Glu Glu Asn Leu Ala Lys Pro Phe Leu Thr Leu Tyr Gly Leu Glu Ser
 260 265 270

Glu Lys Lys Pro Thr Val Thr Ala Phe Asp Thr Ser Asn Gly Ala Lys

275

280

285

Tyr Leu Met Glu Ala Asp Ile Asn Ala Asn Asn Leu Arg Glu Phe Cys
290 295 300

Leu Ser Leu Leu Asp Gly Thr Leu Pro Pro Tyr His Lys Ser Glu Pro
305 . 310 . 315 . 320

Leu Pro Gln Glu Lys Gly Leu Ile Glu Lys Val Val Gly Arg Thr Phe
325 330 335

Asp Ser Ser Val Leu Glu Ser His Gln Asn Val Phe Leu Glu Val His
340 345 350

Thr Pro Trp Cys Val Asp Cys Glu Ala Ile Ser Lys Asn Val Glu Lys
 355 360 365

Leu Ala Lys His Phe Ser Gly Ser Asp Asn Leu Lys Phe Ala Arg Ile
370 375 380

Asp Ala Ser Val Asn Glu His Pro Lys Leu Lys Val Asn Asn Ser Pro
385 . 390 . 395 . 400

Thr Leu Phe Leu Tyr Leu Ala Glu Asp Lys Ser

405 ... Ala Glu Asp Lys Asn Asn Pro Ile Lys Leu

410 415

Sex Lys Lys Ser Ser Val Lys Asp Met Ala Lys Leu Ile Lys Glu Lys
420 425 430

Leu Gln Ile Pro Asp Val Glu Thr Val Ala Ala Pro Asp Asn Val Lys
435 440

Asp Glu Leu

<210> 19
<211> 1078
<212> DNA
<213> Trinucleotide

1400-18

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caaaaatcatt	caaggggaag	cttttatttg	tctttgtgga	gcgtgacaat	gaggaagttg	240
gcgAACCTGT	tgccaattac	tttggaaatta	ctggacaaga	gaccacgggtt	cttgcttaca	300
ctgggaatga	agacgctaag	aagttcttct	tcaccgggtg	aatatcactg	gacaccattta	360
aggaatttgc	tcaagatttc	atggaggaca	agcteacacc	atcctacaag	tctgacccag	420
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<210> 20
<211> 294
<212> PRT
<213> Triticum aestivum

<400> 20

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20 25 30

Asp Asn Pro Ile Lys Lys Gln Ile Leu Leu Phe Ala Val Ala Lys Glu
35 40 45

Ser Ser Lys Phe Leu Pro Ile Ile Lys Glu Thr Ala Lys Ser Phe Lys
50 55 60

Gly Lys Leu Leu Phe Val Phe Val Glu Arg Asp Asn Glu Glu Val Gly
65 70 75 80

Glu Pro Val Ala Asn Tyr Phe Gly Ile Thr Gly Gln Glu Thr Thr Val
85 90 95

Leu Ala Tyr Thr Gly Asn Glu Asp Ala Lys Lys Phe Phe Phe Thr Gly
100 105 110

Glu Ile Ser Leu Asp Thr Ile Lys Glu Phe Ala Gln Asp Phe Met Glu
115 120 125

Asp Lys Leu Thr Pro Ser Tyr Lys Ser Asp Pro Val Pro Glu Ser Asn
130 135 140

Asp Glu Asp Val Lys Val Val Val Gly Lys Ser Leu Asp Gln Ile Val
145 150 155 160

Leu Asp Glu Ser Lys Asp Val Leu Leu Glu Ile Tyr Ala Pro Trp Cys
165 170 175

Gly His Cys Gln Ser Leu Glu Pro Ile Tyr Asn Lys Leu Ala Lys Tyr
180 185 190

Leu Arg Gly Ile Asp Ser Leu Val Ile Ala Lys Met Asp Gly Thr Asn
195 200 205

Asn Glu His Pro Arg Ala Lys Pro Asp Gly Phe Pro Thr Ile Leu Phe
210 215 220

Tyr Pro Ala Gly Lys Lys Ser Phe Glu Pro Ile Thr Phe Glu Gly Gly
225 230 235 240

Arg Thr Val Val Glu Met Tyr Lys Phe Leu Lys Lys His Ala Ala Ile
245 250 255

Pro Phe Lys Leu Lys Arg Pro Asp Ser Ser Ala Ala Arg Thr Asp Ser
260 265 270

Ala Glu Gly Pro Gly Ser Thr Thr Asp Ser Glu Lys Ser Ser Gly Ser
275 280 285

APR. 7.2004 1:27PM

DUPONT BMP 25

NO. 0733 P. 22

Asn Pro Lys Asp Glu Leu
290